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# MATERIALS AND PROCESSES IN MANUFACTURING

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Type
Flat
External conical
Internal cylindrical
Curved irregular

**E 1-3.** Object composed of seven geo-surfaces.

around specific processes, usually stillation. They primarily are the be considered in this book.

ing of *hardware*, the primary objec- desired configuration, size, and : bounded by various types of sur- arranged relative to each other. ed by producing the surfaces that

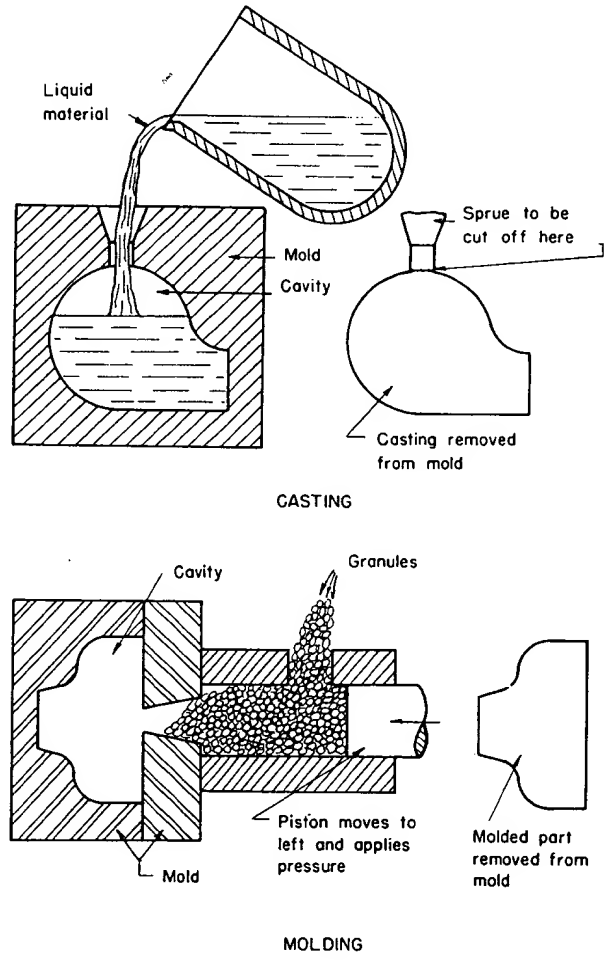
alyzed and broken up into these tured by using processes that will : of material so as to produce and ause material to form into a stable ng surfaces. Consequently, in de- ifies the shape, size, and arrange- e designed configuration must be provide the desired properties and ain the required bounding surfaces ive of this book is directed toward

ufacturing processes can be clas-

- Chipless
- Heat cutting
- Heat treating
  - Finishing
  - Assembly
  - Inspection

These types are not completely exclusive. For example, some finishing operations involve a small amount of material removal. However, the material removal is minor, and it is not the purpose of the operation. Similar situations exist relative to some of the other types.

*Casting* and *molding* involve introducing liquid, granular, or powdered material into a previously prepared mold cavity. Liquid material (usually mol-



**FIGURE 1-4.** Casting and molding illustrated.